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Riffian acquisition of vegetable food may be divided into four processes, some of which may be developmental stages, and all of which are in contemporaneous use.

1. The gathering of edible wild plants.
2. The care of fruit and nut-bearing trees and of vineyards.
3. The care of gardens.
4. The cultivation of grains and leguminous plants.

The following subjects also pertain to agriculture and vegetable food-getting.

1. A calendric cycle of agricultural events.
2. Tools and machinery.
3. Communism in agriculture.

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137 Collecting and Gathering. There are certain wild products growing on mountains, in valleys, in springs, and on refuse heaps, which are of food value and are collected and eaten, either from choice or as emergency rations in time of famine, although no attempt is made to cultivate them. So far as can be determined, they are as follows.

azemmur,¹ the wild olive.

erbejuth,¹ the oak. Both acorns and the tree upon which they grow are called by the same name.

adheman,¹ the hawthorne. The haws, called *soaror*, are gathered and eaten.

larnej,² a wild lemon tree, probably escaped from cultivation.

tuth,² the mulberry, at present wild. It was probably introduced earlier and then abandoned.

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habb ul muluk,² the wild cherry, with probably the same history as the mulberry. Both trees are now cultivated by the Senhaja.

asasnu,² the arbut, or strawberry-tree. Its fruit is eaten fresh, also dried and put into bread.

thabgha,¹ wild blackberries.

tuzzell,¹ a bush the pod of which is eaten.

thakhfar,¹ a wild rose, the pod of which is eaten.

askum, wild asparagus.

ma'isha, the wild tomato, found in old refuse heaps. Its cultivation has been abandoned.

theliseeth,² a plant growing in the mountains, eaten as a green.

yanush, watercress, or a very similar plant.

thezhiuma, another water plant, growing in springs.

thafa ikshuth, a wild plant resembling celery.

thighigheshth,¹ a wild plant the roots of which are boiled and used for washing wool. Its leaves are cut up, boiled, and eaten.

benaaman, a wild poppy. Women eat its leaves, and children its buds.

imzwar, a plant resembling shamrock or clover. Its leaves, slightly sour in taste, are eaten.

tuasvin, mushrooms.

¹ See Introduction, p. 8.

² The wild lemon, cherry, and mulberry were not mentioned in the Introduction because they are not indigenous.

³ This is perhaps related to the root given by LACUS (p. 506) for mallow. *Tibides*, in the Zemmur dialect, is the flower.

⁴ Lacus (p. 39) suggests that this may be *Sesuvium portuacastrum*.

MATERIAL CULTURE

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The gathering of wild vegetable products is traditionally considered to antedate agriculture. Tales are told of the times when the Riffians subsisted on these products and game alone. In Ktama, where agriculture is difficult, the gathering of wild plants, especially *tuzzell*, forms an important occupation. At the end of winter, when the dried fruit is gone and when the larders are low, many Riffian families would die of hunger if their womenfolk did not go out on the mountain slopes and up the watercourses looking for these natural foods.

The green plants, such as watercress and asparagus, are subject to a dietary sex taboo. Woman only may eat them. The reason given for this distinction is that they produce blood, fat, and soft flesh, desirable in women but not in men.

Mulberries and cherries were probably introduced by the Arabs and later abandoned. Mulberries are not considered good food and are seldom eaten except through necessity. Tomatoes were probably introduced from Spain and then given up.

Cultivation of Fruit and Nut Trees and of Vineyards. *silon* (male), *misola* (female), the domestic olive tree. The male tree produces large olives low in oil content, which are preserved in lemon juice and eaten as a relish. The fruit of the female tree is pressed into oil. As a rule all the male trees in an olive yard are cut down with the exception of one, which is left to fertilize the female trees. The olives are called by the names of the trees which bear them.

arman, the pomegranate tree. The Riffians recognize sex differences in pomegranates, considering that the fruit with a thick skin and large, hard seeds in the granules is produced by the male tree, whereas the better fruit is produced by females. As a rule, the male trees are all cut down but one, which is left for fertilizing the others. Sometimes male trees are left, so that the fruit may be sold in markets frequented by people unacquainted with the difference. The fruit and tree bear the same name.

er ghas, the fig tree. There are four varieties of fig trees, *aseiri*, *aghudani*, *awar n aksai*, and *abaran*. The fruit borne by the *aseiri* is round, with longitudinal purple and green lines; that of the *aghudani* is long, pear-shaped, and purple; that of the *awar n aksai* is round and light green. There are two varieties of *abaran*, one of which is round and green and the other long with black or purple lines. The three first varieties bear twice a year, in June and in September. The June figs, called *er bashor*, are eaten but not dried, except for use as medicine, since they contain but little sugar. The September figs, called *thezath*, are dried. The *abaran* varieties bear only in September. The Riffians say that the *abaran* types are the only indigenous strains, and that the *aseiri* and *awar n aksai* came originally from the Arabs, whereas the *aghudani* is derived from the Negroes.

shukrar, a wild fig. Planted, it is said, by birds that have eaten cultivated figs, this fruit is useless for eating, but is employed for magical purposes. Each year the women and children go out and gather the wild figs when ripe, tie them together in pairs with grass, and hang them on the branches of the domesticated fig trees. There are said to be insects in the wild figs which come out and touch the buds of the domestic figs. It is thought that if these wild figs were not so hung and if the insects from them did not touch the buds, the cultivated figs would not bear.¹

¹ Westermarck (p. 190) states that the Riffians hang male figs in female trees, in order to fertilize their fruit. A small insect, *Blattophaga grossorum*, bores in and out of the figs, fertilizing them. Westermarck refers to Elfving's *De Västgötska Kulturväxterna* (Helsingfors, 1895), p. 74.

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788 a *fqih*, a schoolmaster from the cantonal mosque of Timarzga, who
 778 stands at the northeast corner of the prayer site, between the site
 782 itself and a cistern a few yards away. The men about to pray form
 long parallel lines, of over a hundred to each line, all the way back
 to the tomb.

The act of prayer in this particular place and on this particular occasion was one which, in my opinion, was unparalleled in simple dignity. The reverence which overcame the worshippers was something very personal and something very startling in its intensity. Here the Rifian was as close to and as intimate with his God as he would ever be, probably, during his life on earth.

[191] The words of the prayer-call, familiar to all who have studied Arabic, became, on this occasion, as I heard them from the *ādhān* grove, blurred into a monotonous sea of vocalisms, rising and falling as the call was relayed back from line to line. Each line of men has its *musammī*, who repeats to the men in his row what the *fqih* has said, so they will hear it more distinctly. They all come through loud and clear on the *takbīr* (*Allāhu Akbar*, «God is Most Great»), but the rest of it tends to degenerate into a jumble, for, outside the *fqih*, there is only about one man in five hundred who speaks, writes or understands Arabic with any fluency at all; and the rest must perforce try to catch the words of the very, very few who comprehend what is being said. There are always, also, a few old women and widows who pray, but they do so apart from the men entirely, on the other side of the grove; and it is doubtful whether they can hear the *fqih* at all.

Although some pilgrims bring food with them which they eat either before or after praying, the prayer is the last item on the agenda. After it is over, everyone goes home, to kill his sheep in the bosom of his family the next day. By mid-afternoon, most people have saddled up their donkeys and departed, and the peak of Sidi Bū Khayr is as bare and desolate as it was before.

788 If the *imārah* falls at the end of summer, at the time that the
 778 grapes in the mountains begin to ripen, grape-picking may begin
 immediately after the 'Aid al-Kabīr, with no signal given by the
 ● [222] village headmen.

[137] delta, but it becomes progressively rarer toward the eastern semiarid sector of
 [314] this zone. *Pistacia* wood is highly prized as a source of charcoal, and this fact alone may explain the plant's degraded appearance in the hills south of Tangier.

Pistacia rarely forms a pure stand. Several of the other plants found in palmetto scrub could be described as weeds, for they appear mainly in fallow fields. *Asphodelus microcarpus*, *Urginea maritima*, *Daphne Gnidium*, and one or more species of *Asparagus*, *Ononis*, and *Papaver* are prominent among them. In areas where most of the surface is cultivated, as in the Fahs territory south of Tangier, these plants, together with thistles and scattered clumps of palmetto, constitute all but a small part of the total inventory of vegetation. On rocky knolls and alluvial slopes too steep for cultivation, these plants grow among *Pistacia*, *Calycotome*, *Lavandula*, and the oleaster. The percentage of thorny plants is high. Besides *Calycotome* and thistles, *Carduus*, *Smilax*, and *Rosa* are found.

Dense shrub formations are rarely seen on the thickly settled Atlantic versant. One may walk unimpeded anywhere in the zone bounded by the Atlantic coast, Tangier, and Ksar al-Kebir. The thick shrub growth on the Mediterranean coast near Wad Lao contrasts sharply with the open formations on the Atlantic littoral. In the former area, *Cistus ladaniferus*, *C. albidus*, *Erica arborea*, *Pistacia lentiscus*, and *Arbutus Unedo* combine to form an impenetrable thicket. The limestone mountains of northern Morocco are almost bare of shrub or tree growth. [133] From Ceuta to Wad Lao the eastern horizon is dominated by a great wall of limestone, almost completely devoid of soil. The prevalent whiteness is disturbed only by scattered clumps of palmetto and spiny gorse (*Ulex parviflorus*).

In the area covered by palmetto scrub the persistent riparian plant is the toxic *Nerium oleander*. It may be accompanied by *Crataegus*, *Myrtus*, and *Arbutus*, but in most of northwestern Morocco the oleander is the only plant on the banks of streams. The presence of *Alnus*, *Populus*, *Salix*, and *Vitex* along stream channels in the Sanhajan highlands may be explained by the persistence in that area of other trees, especially cedar, juniper, and oak, which have been adequate thus far as a source of fuel and building material.

In the drier eastern sector of northern Morocco, palmetto scrub grades into a thorn scrub dominated by *Zizyphus lotus*, a spiny and xerophytic member of the buckthorn family (Rhamnaceae). It is difficult to draw a line between these two formations. Isolated clumps of palmetto are found as far east as the Moulouya Valley, and *zizyphus* extends up the valley of Wad Ghis as far as Targist.

Well adapted to aridity and continentality, *Zizyphus lotus* has become the dominant plant of Morocco's semiarid plains. Clumps of *zizyphus* are conspicuous within most of the area mapped as thorn scrub. This plant may grow three meters high, but is most often seen as a shrub. It is deciduous; and, during the dormant winter season, gray and seemingly lifeless clumps of *zizyphus* are a characteristic feature of the landscape. Its branches are widely used as fence material, and this practice enhances the contrast between the semiarid sector of northern Morocco and the wetter western zone, where *Opuntia* is planted as a hedge. The fleshy [262] drupe of *zizyphus* is collected wherever it grows; when cereal stocks are exhausted, "lotus bread" is an important food."

[222] * *Zizyphus lotus* is occasionally planted in Andalusia, Portugal, and Sicily, but in northern
 [113] Africa the fruit is collected from wild plants. Aug. Chevalier, "Les jujubiers ou *zizyphus* de

Environment

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- 137 On protected sites, zizyphus and sumac (*Rhus pentaphylla*) form a thicket. In areas where zizyphus and sumac are mixed with *Pistacia atlantica*, the thorn scrub formation could be described as a thorn forest. Fields that have been fallow for several years are covered with *Asphodelus microcarpus*, *Marrubium alysson*, *Fagonia cretica*, and *Lycium intricatum* as well as the ubiquitous zizyphus. Alfa grass (*Stipa tenacissima*) covers part of the area between Ikibdhanen and Kar-Kar. Alluvial soils in the same general area are covered with esparto grass (*Lygeum spartum*) and dwarf sage (*Artemisia herba alba*). The areas occupied by these three species may be advanced colonies of the steppe formations of the upper Moulouya Valley and the Algerian Hauts-Plateaux.

FOREST FORMATIONS

As figure 8 indicates, most of the forest species in northern Morocco belong to the families Pinaceae and Fagaceae. Two evergreen oaks dominate the latter group: the holly or holm oak (*Quercus Ilex*) and the cork oak (*Quercus Suber*). The wide range of the holly oak is indicative of its edaphic and climatic tolerance (fig. 7).¹³⁷ In northern Morocco it is found from an elevation of about 500 meters up to the crest of the Rif chain. It is mixed with cedar and fir above 1,500 meters and with zizyphus in the semiarid region east of Alhucemas. *Quercus Ilex* may appear as a tall tree, but most specimens show the damaging effects of fire, cutting, and browsing. The holly oak is certainly a forest species, but it would be misleading to speak of forests of this tree. The area delimited in figure 8 merely indicates the zone in which specimens of this species are numerous. Many specimens are only two meters high. Emberger estimates that *Quercus Ilex* is spread over 700,000 hectares of Morocco, and that this territory may represent less than half of the primordial range.¹³⁸

- [132] The effective limit of the cork oak nearly coincides with the 400 mm. isohyet. *Quercus Suber* appears on schist in the highlands of Ghmara and Sanhaja, on sandstone in the mountains west of Tetuán and Shawen, and on Pliocene dunes south of Larache. Cork forests are not found on residual soils weathered from limestone, or on heavy alluvial soils. Most of the eastern half of northern Morocco is too dry for the cork oak. A single stand occurs in the highlands east of Wad [132] Nkour, where the orographic mechanism produces rainfall heavier than is observed in the neighboring lowlands.

The natural form of the cork oak is that of a large tree with a short trunk and spreading crown. Specimens of this form are rare today. Tall trees develop from seed regeneration, whereas most trees have a lateral growth that results from sprouting. The latter habit indicates a history of abuse, whether by cutting, burning, or browsing. Undisturbed forests usually have a shaded floor with little underbrush, but cork trees are more commonly accompanied by a number of shrubs. The faithful companion of *Quercus Suber* in northern Morocco is the woody briar *Erica arborea*, which also avoids calcareous soils. Under conditions of extreme degradation, the quick-seeding Cistaceae and the aggressive palmetto are more prominent than other undergrowth. Frequent disturbance, especially

• (222) [113] "l'ancien monde et l'utilisation de leurs fruits," *Revue de Botanique Appliquée et d'Agriculture Tropicale*, 27 (1947), 470-482.

¹³⁸ Emberger, *Les Arbres du Maroc*, p. 117.

A, B, [See pp. 24 & 20 respectively--Analyst]

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226 more important at that time than it is today. In chapter vii evidence will be pre-
191 sented to show that the same coastal area was once an important center of ship-
building.

S
226 Fresh-water fishing seems to be restricted to a few streams in the mountains
824 of Ghmara and Sanhaja as-Srair. The Sanhajans make use of the toxic roots of
191 *Daphne Gnidium* (Arabic *mat'nan*) to stun fish, a practice that has been observed
also in Sardinia, Portugal, and Spain."

UTILIZATION OF WILD PLANTS

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752 The average Moroccan woman can identify at least a hundred plants, and many
824 are thought to have medicinal or magical qualities. To cure an ear infection, the
191 ear is plugged with a mixture of butter and the ground leaves of *Ruta Montana*.
The cure for a cold is to induce sweating by drinking milk or tea heavily seasoned
with *Mentha pulegium*. A wound is cleaned with the leaves of *Inula viscosa*, and
the leaves of other plants are worn under headgear to cure or prevent headaches,
or in slippers to reduce fatigue. The number of similar ideas is limitless.

R
222 Many wild plants have food value, and are collected even when regular har-
262 vests are bountiful. The list of such foods includes the seeds of several species of
191 *Cistus* (*C. albidus*, *C. laurifolius*, *C. ladaniferus*), the sweet acorn of *Quercus Ilex*,
139 the fruit of *Arbutus Unedo*, the roots of *Halimium lasiocalyx*, and the berries
of *Rubus ulmifolius* and *Crataegus laciniata*. Moroccans eat the bud of the palmetto.
Acorns and *Cistus* seeds seem to be the most important famine foods.

MARKETS

R
484 It would be a mistake to conclude that rural communities in northern Morocco
191 live in complete isolation. Moroccans are fond of travel, and the men, at least,
have some time to satisfy their wanderlust each year. There are few men, even
in the remote highlands, who have not visited at least one city. But when a Rifian
or Sanhajan sets out for Fez or Tetuán he is likely to be more interested in sight-
seeing than in shopping. He may bring back a new cloak for himself or a piece
of costume jewelry for his wife, but more often returns only with accounts of
strange sights and tales of adventure.

R
438 A rudimentary system of trade does exist. A few manufactured articles are
439 found in most homes, and some communities produce marketable goods. For ex-
191 ample, the village of Mediuna, just south of Cape Spartel, is engaged in quarry-
ing millstones from the Caves of Hercules." Here they find a gritty conglomerate
that is ideal for milling. The *m'allimin* (masters) who hew out these stones trans-
port them on muleback to Tangier, whence they are traded throughout northern
Morocco. Rifian women spend some time making pottery. During the idle months
of winter, after the cereals have been harvested, Rifian men work on mats and
baskets. Leatherwork is done at Taghzut, and winnowing forks are made at
Ktama. Yet none of these activities seriously disturb the subsistence orientation
of rural life. Specialization of this sort supplements but never supplants agri-
culture. The abiding concern of all tribesmen is with their fields.

113) * R. F. Heizer, "Aboriginal Fish Poisons," *Smithsonian Inst. Anthro. Papers*, 38 (1953), 263.
* C. S. Coon, *The Seven Caves: Archaeological Explorations in the Middle East* (New York: Alfred Knopf, 1957), p. 45; E. Cecil Curwen, "Tangier Quern-Quarry," *Antiquity*, 119 (September, 1956), 174 and plate vii.